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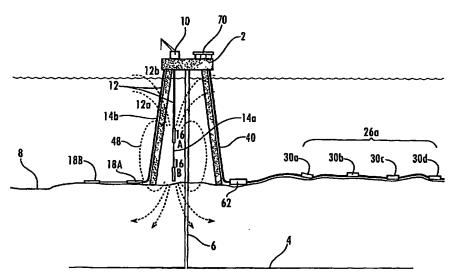
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[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR HYDROCARBON RESERVOIR MONITORING USING CONTROLLED-SOURCE **ELECTROMAGNETIC FIELDS**



(57) Abstract: The system and method for real-time monitoring of a hydrocarbon reservoir (4) during extraction include an electromagnetic source assembly (16) for transmitting a first plurality of electromagnetic fields. A plurality of seafloor antennae (30a-30d) is distributed over an area of the seafloor (8) corresponding to the reservoir (4), where each antenna (30a-30d) comprises a receiver electrode array (30a-30d) adapted for receiving a second plurality of electromagnetic fields and generating signals corresponding to the detected fields. A data logging processor receives the signals over time and stores data corresponding to the signals. Different combinations of the receiver electrode are used in combination with transmitter antennae for measuring vertical, radial and/or azimuthal fields. Transmission and detection of the fields can be performed continuously or at timed intervals during hydrocarbon extraction to estimate the rate and efficiency of extraction.



 before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/39309

IPC(7)	A. CLA	SSIFICATION OF SUBJECT MATTER				
US CL: 324/337 According to International Patent Classification (PC) or to both pational classification and IPC B. FIELDS SEARCHED Minimum documentation exacthed (classification system followed by classification symbols) U.S.: 324/337, 334, 338, 347, 354, 175/45; 73/152.02, 152.03, 152.05; 150/67250.02 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched NONE Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EAST Geophysics Database C. DOCUMENTS CONSIDERED TO BE RELEVANT Category * Citation of Gocument, with indication, where appropriate, of the relevant passages Relevant to claim No. A US 4,617,518 A (SRNKA) 14 October 1986 (14.10.1986), Figure 1. 1-29 A US 3,052,836 A (POSTMA) O4 September 1962 (04.09.1962), Figure 1. 1-29 A US 2,531,088 A (THOMPSON) 21 November 1950 (21.11.1950), Figure 1. 1-29 A US 4,634,804 A (SPALDING) 06 January 1987 (06.01.1987), Figure 1. 1-29 LUS 4,634,804 A (SPALDING) 06 January 1987 (06.01.1987), Figure 1. 2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2						
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